SiliconGraphics
Computer Systems

Indy™ Product Guide

INDY

1 IndyCam -
This fully digital camera with adjustable focal length lens and a CCD array delivers 512 x 492 pixels with full resolution 640 x 480 and a digital video signal to the built-in video subsystem

2 High-Bandwidth System Architecture -
64-bit system bus enables industry leading 267MB/sec sustained throughput. These high-speed busses combine with high-performance custom ASICs and the 64-bit R4000 MIPS RISC CPU to give Indy unsurpassed application performance

3 High-Capacity Memory Subsystem -
Two-way interleaved memory system accommodates up to 256MB and is powered by a 400MB/sec memory bus enabling very fast memory access and I/O throughput for your data sets

4 Upgradable CPU Module -
Indy supports either the R4000PC or R4000SC CPU. Modular CPU implementation provides for easy upgrades to more processing power today and in the future

5 Built-in Video Subsystem -
Dedicated video-in ASIC captures full-resolution, full-color, and full-frame rate video directly into the high-speed system architecture. This enables the regular use of real-time video applications such as video-conferencing, as well as the use of video in applications such as Media Mail and Showcase™ presentations

The Silicon Graphics Advantage

Imagine being able to incorporate sound, video and high-quality 3D graphics into your work without the cost and complexity of adding option cards, software, device drives or cables to a PC, Mac™ or other loosely integrated workstation. Well, at Silicon Graphics we provide all the digital media tools you need to collaborate interactively with your workgroup in one system – Indy™.

Indy, the newest member of the Indigo™ family of desktop workstations, gives you a digital color camera, (IndyCam™), an engaging user environment and a host of digital media tools – all at a remarkably low price. And Indy is based upon the MIPS RISC R4000® processor and an extremely fast system architecture, so it achieves the incredible application performance you've come to expect from a Silicon Graphics® system.

This whole new world of capturing, creating and communicating ideas in the most natural and intuitive ways is now open and accessible to you. Over 1,300 applications are supported, which makes Indy ideal for many markets such as CAD/CAM, media authoring, software development, technical publications, chemistry, imaging and geographical information systems. So whether you are a creative or technical professional, Indy gives you the application performance you require and the interactive media you want, at the price you've been asking for.

6 Built-in Digital Audio Subsystem -
As with the video-in subsystem, the audio subsystem is fully integrated on the 64-bit system bus and provides four independent channels of CD-quality audio output as well as two audio input channels supporting a variety of audio applications

7 Expandibility -
Two drive bays allow you to expand your disk space to 2GB internally, or to add a floptical drive that reads and writes Mac and PC floppies as well as 21MB floptical media

Stereo Interface StereoView Ready - Connect StereoView hardware to enable virtual reality and advanced graphics applications

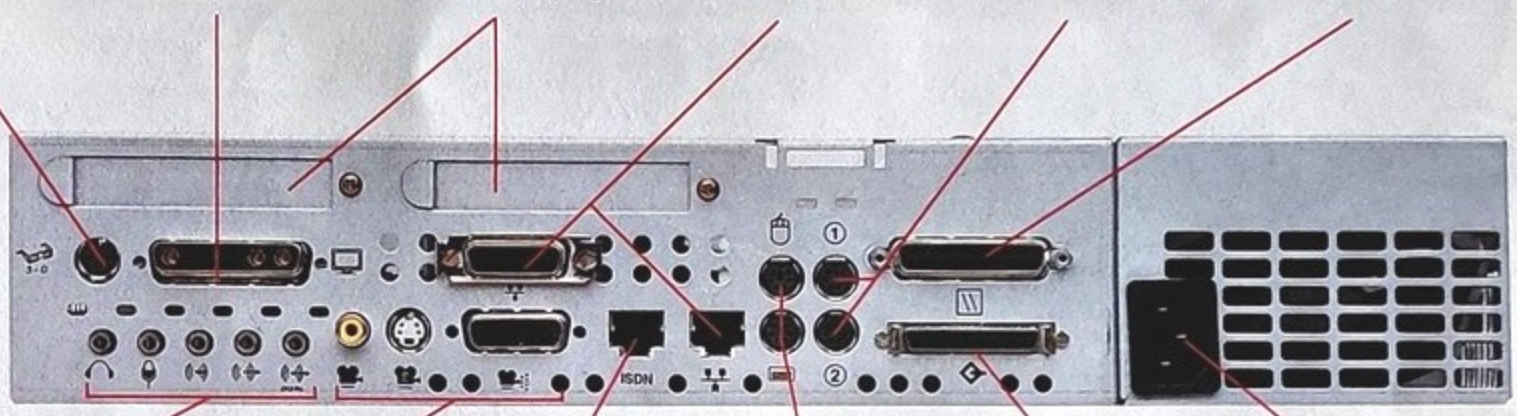
Monitor Connector - High-resolution (1280x1024) and low-resolution color monitors up to 76Hz

GIO Expansion - Provides maximum expandability for professional video options, video compression, additional networking interfaces and a variety of third-party add-in cards

AUI & 10BaseT Ethernet Connections - One ethernet controller with both AUI and 10BaseT interfaces for convenient and flexible standard networking. Both interfaces support 10Mbit/sec transmission rates

Two Serial Connections - Mac compatible RS-422 and RS-232 as well as MIDI timing at transfer rates up to 38.4 Kbits/sec through these two 8-pin mini-din connectors for easy integration with modems, printers, and other serial devices

Parallel Connection - A bidirectional, programmable 8-bit parallel port with up to 1.0 MB/sec transfer rate provides easy access to a variety of printers, scanners, and other devices



Audio Interfaces - Line-in and line-out jacks, microphone-in and headphone-out jacks as well as a digital I/O jack for CD-quality audio applications

Video Input Connections - Built-in video accepts a variety of standard video inputs with a Silicon Graphics digital port, S-video port, and a composite analog port supporting NTSC/PAL formats

ISDN Built-in - Standard wide-area networking interface suitable for video conferencing, telephony, and emerging media application technologies. ISDN provides two channels of 64Kbits/sec transmission rate over ordinary telephone lines

Keyboard and Mouse Connections - Standard PS/2 interfaces

SCSI-2 Connection - In addition to the two internal peripheral bays, the integrated SCSI controller also supports up to five additional external devices such as disks, CD-ROMs, and scanners. The controller provides fast, single-ended, 8-bit, transfers up to 10MB/sec

Power Supply - 170 watt autoswitching power supply enables system operation anywhere in the world

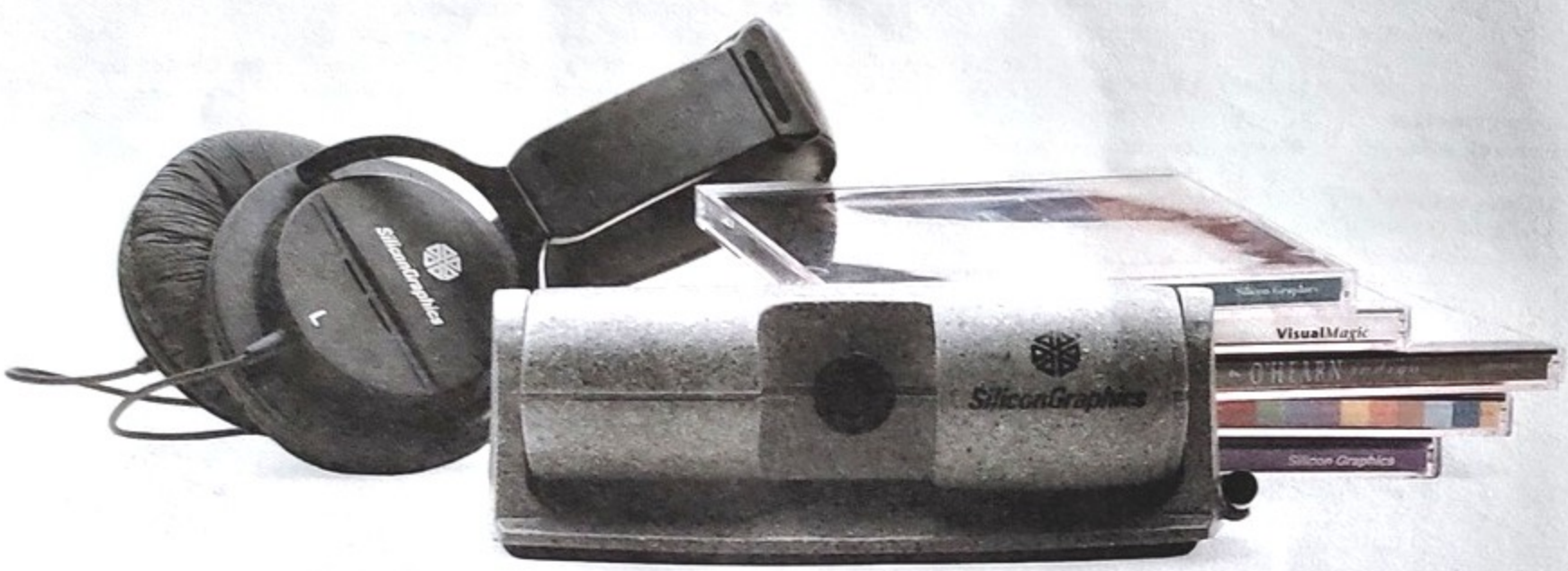
R4000SC CPU Module Option - Identical to the R4000PC with an additional 1MB of unified instruction/data high-performance secondary cache. This 64-bit 100Mhz R4000SC CPU powers your Indy system with 87 MIPS, 16 MFlops, 63 SPECfp92 and 57.5 SPECint92

R4000PC CPU Module Option - Full 64-bit 100Mhz R4000PC CPU option with primary cache 8k instruction and 8k data. Powers your Indy system with 87 MIPS, 6 MFLOPS, 37.4 SPECfp92 and 36.5 SPECint92

The Most Technology Per Square Inch

While Indy is the lowest-priced member of the Indigo family, we didn't compromise on features. In fact, Indy packs more interactive media, workgroup collaboration tools and computing power in a PC-priced desktop system than any other comparable workstation around.

This 64-bit system has been designed to crunch through large data sets – fast. And Indy can be configured and upgraded to meet your requirements, so your investment is protected. The advanced system architecture of Indy gives you a choice of MIPS® RISC R4000® modules and graphics subsystems. You can add up to 256MB of memory, seven Fast SCSI-2 devices and 2GB of internal disk storage as your needs grow. Of course all configurations of Indy come standard with digital audio and video and integrated digital networking capabilities.



A World of Digital Media

Indy has been designed with plenty of media tools to enhance your communication. Now you can incorporate 3D graphics, photorealistic images, video, CD/DAT-quality audio and text into your work, in real time – all in digital format. And best of all, IndyCam, digital and analog video-in, a microphone, CD-quality audio, support for Kodak PhotoCD format and software media tools come standard with every Indy workstation.

IndyCam™ is an ideal tool in collaborative workgroup communications. With IndyCam, full-resolution and full-frame NTSC/PAL video can be captured directly to memory in true digital format. The video subsystem performs filtered scaling to 1/2, 1/3, and 1/4 screen. CD/DAT quality audio includes four channels of analog audio plus two channels of digital audio. So, whether you are integrating video into your designs, or sending video clips to your co-worker, you will soon discover that the Indy digital media tools are invaluable.

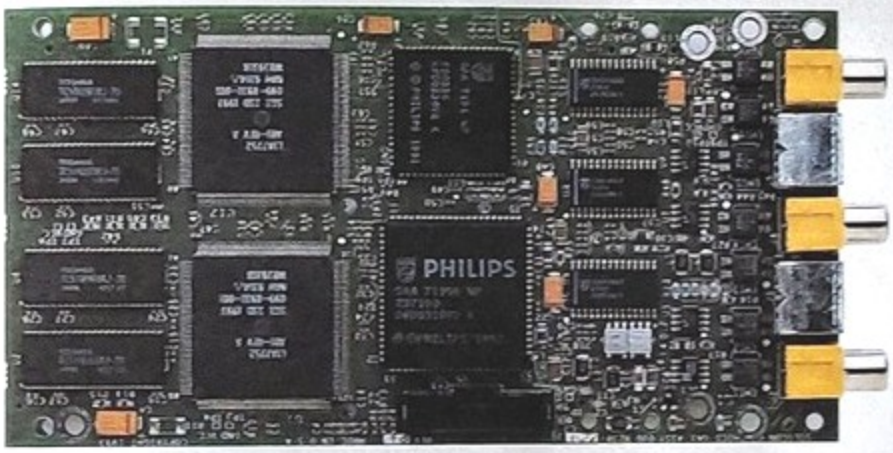
Video-based Communications

Video is the most convenient and most consistently accessible method for the display of moving images. With Indy you can create impressive visual insights and use video for sharing those insights with a wide audience. Indy comes standard with video-in for capturing video images, sending media mail, creating digital media presentations and conducting desktop conferences in real time.

Multi-Point Video Teleconference - Real-time video teleconferencing utilizing the InPerson software option with the shared media board for common image viewing and manipulation as well as real-time display of digital video with audio data.

High-Quality Video Output

If you need to upgrade the video capabilities of your Indy system to print simulations and models to videotape as they appear on the screen, the Indy Video™ option card is your answer. Indy Video brings the power of high-quality video communication to your desktop workstation.



Now you can print-to-tape to share the high-resolution images you have created. You can also create video presentations quickly and perform real-time scan conversions of nearly full-screen graphics to video resolution. Imagine the value of being able to send your 3D model to video tape for viewing at a customer presentation. Frame animation of compute-intensive models or simulations can be output to videotape for real-time playback.

Indy Video provides for broadcast quality editing and special effects. So now all the real-time effects you've been wanting to do, such as overlays, dissolves, fades, wipes, chroma keying and luma keying, can be a reality. Indy Video also allows you to capture video clips to system memory or disk. 'Video-In-A-Window' provides a convenient way of displaying this real-time, frame-by-frame video output.

The Fastest 2D Graphics Around

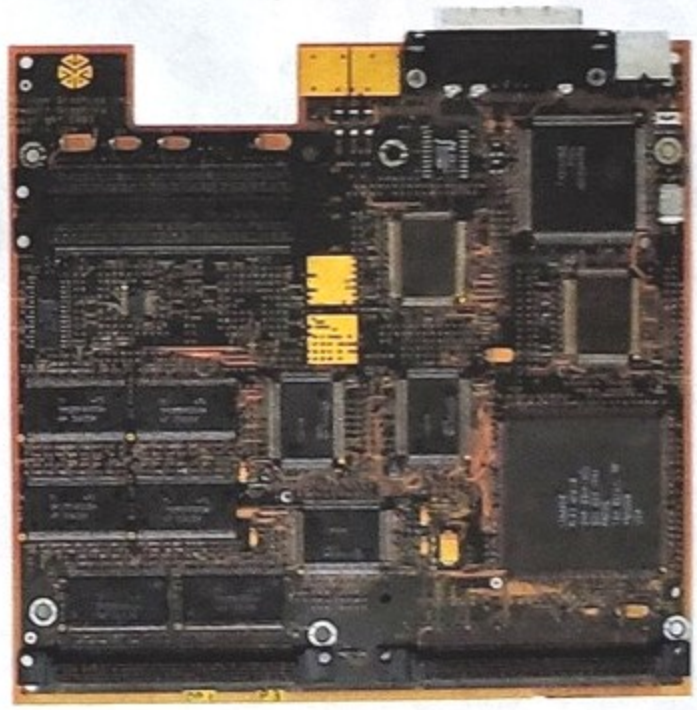
Both technical and creative professionals will appreciate the high-resolution 8-bit (virtual 24-bit) or 24-bit Indy graphics sub-system. Indy is a powerful 3D system but also offers amazing 2D graphics for imaging and line drawing performance.

With Indy things happen fast – up to 1.4 million X11-lines/second and 45 million pixels/second – all with 1280 x 1024 screen resolution and a 72Hz refresh rate. You can manipulate images at up to 600K 2D and 500K 3D vectors per second. Indy achieves a higher level of performance with line and triangle drawings than any other comparably priced system around.

IndyGraphics -
High-performance high-resolution (1280x1024) graphics subsystem supports the Graphics Library as well as 32-bit Z-buffering in software - Because Indy Graphics performance is directly proportional to CPU speed, upgrades to faster CPUs automatically increase application performance

Advanced Features -
Anti-aliasing through area-sampling, 256 sub-pixel positions, and endpoint filtering provide enhanced performance for wireframe applications such as mechanical CAD and molecular modeling

8-bit or 24-bit Color -
The choice of either 8 or 24-bit color provides flexibility and upgradability



Industry Leading Performance -
IndyGraphics draws 1.4 million X-lines/sec and fills 45 Mpixels/sec, providing unsurpassed performance for demanding imaging and line drawing applications

REX3 -
The Raster Engine (REX3) ASIC converts geometric data processed by the CPU into pixel and line data that it then writes into the frame buffer - The REX3 supports peak fill rates of 437M pixels/sec for block fills and 62 Mpixels/sec for shaded spans

An Engaging Desktop Environment

Most user interfaces are too rigid, requiring you to adapt to their way of working instead of adapting to yours. The Indigo Magic™ User Environment changes all that by giving you a unique way of collaborating with your workgroup, to get your work done better and faster than ever before.

Indigo Magic is a new generation desktop user environment that combines an intuitive desktop management system with powerful digital media tools in one user interface. In fact, we call it a 'Media User Interface', because Indigo Magic simplifies system and network access and facilitates collaborative computing through unique digital media tools.

The Indigo Magic iconic interface lets you organize your desktop environment to suit the way you work, increasing your communication and productivity. Now you have a click and point method of organizing your desktop and accessing resources.

With the Indigo Magic Desk Manager you can create multiple, iconic desktops each having all the applications, files and tools you'll need to work on specific projects. System administration and management is a breeze. Now you can set up your printer and user accounts and connect to a network all with the click of an icon. The Indigo Magic User Environment is 'network aware', so that you can easily find and use all the resources on your network.

Collaborative Communication Tools

The Indigo Magic User Environment includes all of the digital media tools you need to capture, create and communicate your ideas in ways that are more vivid and compelling than ever imagined. With bundled applications and integrated digital media tools you can make interactive 3D graphics, audio and video a part of all of your work.

Imagine sharing your designs in new ways. Now you don't have to cram a dozen people into your office to show your newest model. You can print your 3D model to video and add special effects, graphics or audio overlays and send it to your co-workers. With Indigo Magic user Environment you have the power to make your ideas come alive.

You can be at the forefront of an exciting new era in computing and collaborative work with the InPerson™ desktop conferencing software option. InPerson is designed to partner with Indy to take full advantage of the integrated digital media hardware and the Indigo Magic™ User Environment.

InPerson software provides your team with the tools to share technical and creative information and creative insights without anyone leaving their office. High-quality audio and video, text, images and 3D models are interactively sharable, in real time, over standard network connections. InPerson will increase your productivity and the effectiveness of your collaborative efforts.

Indy Works Well With Others

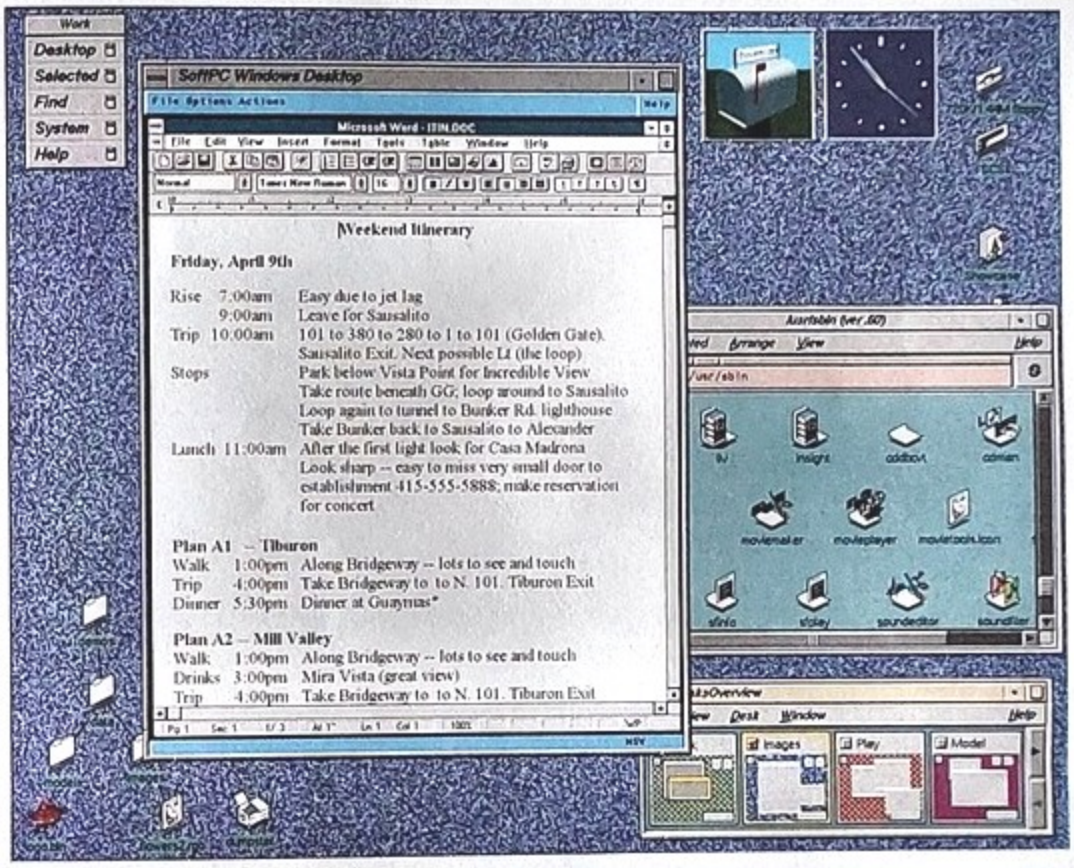
Indy excels in a multivendor environment with Macs and PCs and other UNIX systems. Indy supports PC and Mac client software for Netware™ and AppleTalk™ networks and supports third-party PC and Mac® emulation packages such as Quorum Equal™ and Insignia Soft PC™. Indy also reads and writes PC and Mac floppies – so you can share files in your workgroup with ease. PhotoCD™ is supported and you can write to Quicktime™ files as well.

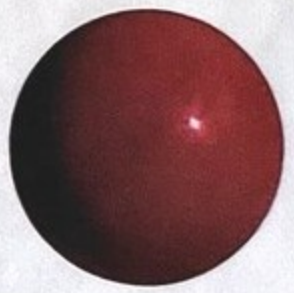
The Out of Box Experience

From the moment you open the box, Indy brings your ideas alive. Enter a myriad of endless possibilities. Explore your creative realm. Expand your world. Have some serious fun. You are limited only by your imagination.

Become an Indy traveler. Move through the 'Out of Box Experience'. Travel through the unbeaten path of Indy. Play interactive Indizone Games and discover sounds and screen savers.

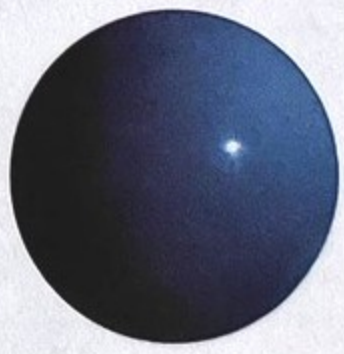
Get out of the box...and jump into Indy.


Work
Desktop
Selected
Find
System
Help
SoftPC Windows Desktop
Weekend Itinerary
Friday, April 9th
Rise 7:00am Easy due to jet lag
9:00am Leave for Sausalito
Trip 10:00am 101 to 380 to 280 to 1 to 101 (Golden Gate).
Sausalito Exit. Next possible Lt (the loop)
Stops Park below Vista Point for Incredible View
Take route beneath GG; loop around to Sausalito
Loop again to tunnel to Bunker Rd. lighthouse
Take Bunker back to Sausalito to Alexander
Lunch 11:00am After the first light look for Casa Madrona
Look sharp -- easy to miss very small door to establishment 415-555-5888; make reservation for concert
Plan A1 -- Tiburon
Walk 1:00pm Along Bridgeway -- lots to see and touch
Trip 4:00pm Take Bridgeway to to N. 101. Tiburon Exit
Dinner 5:30pm Dinner at Guaymas"
Plan A2 -- Mill Valley
Walk 1:00pm Along Bridgeway -- lots to see and touch
Drinks 3:00pm Mira Vista (great view)
Trip 4:00pm Take Bridgeway to to N. 101. Tiburon Exit
/usr/sbin
Images
Play
Model



Indy can be used in a heterogeneous environment as a compute, file or render server. It can also be used as both a server and a workstation.

Indy and the Indigo Magic User Environment give you everything you require in a workstation – power and ease-of-use as well as workgroup collaboration and interactive media tools – at the price you've been asking for.



Technical Specifications

Serious Hardware Features

CPU module	R4000PC@ 100 Mhz R4000SC@ 100 Mhz
Graphics	8-bit planes 1280x1024 up to 72Hz refresh (upgradeable to 24) 24-bit planes 1280x1024 up to 72Hz refresh
Monitor (Gray Granite or Beige)	Color 19 inch 1280x1024 resolution 60, 72, & 76Hz refresh rates Color 16 inch 1280x1024 resolution 60, 72, & 76Hz refresh rates Color 15 inch 1024x768 resolution 70Hz refresh rate
Input/Output	2 serial 1 parallel 1 ethernet (10-baseT or AUI) Fast SCSI-2 ISDN Stereovision
Memory	16MB to 256MB* *using 32MB SIMMS
Mass Storage	Two internal devices: (3.5"x1" form factor) 20MB Floptical Drive 340MB Hard Disk (WW) 535MB Hard Disk (U.S.) 630MB Hard Disk (EUR) 1.0GB Hard Disk (WW)
GIO Expansion	Two GIO-32 slots (one contains video slot)
Input Devices	PS2™ style keyboard and mouse Analog microphone IndyCam: digital color video camera
Warranty	One year hardware

Graphics

Advanced Features	Alpha blending Accumulation buffer Anti-aliased RGB lines and points Texture Mapping Fog Lighting features Arbitrary clipping planes Depth cueing Sub-pixel positioning Stereo graphics Pan and zoom Sphere rendering X11 pixel operations
Color Maps	4 (256 color) 1 (4096 color)
IRIS GL™/Open GL™ Display Modes	RGB double buffer RGB single buffer Color index double buffer Color index single buffer
Overlay/Underlay Planes	8-bit system: 2-bits 24-bit system: 8-bits

Audio

Input	4 stereo channels Mono/stereo microphone (mono microphone included) Line-level stereo analog Serial digital stereo (IEC958, AES3)
Output	4 stereo channels External volume controls Stereo headphone Mono internal speaker Line-level stereo analog Serial digital stereo (IEC958, AES3)
Sampling Rates	48, 44.1, 32 KHz, and many lower rates Independent input/output sampling rates Simultaneous input/output
Converters	Two stereo audio codecs 16-bit, delta-sigma, 64x-oversampling
Connectors	Five 1/8 inch (3.5 mm) stereo jacks

Video

	Independent video bus 2 analog video-in ports (S-Video and Composite) NTSC and PAL support One digital video-in port Video slot on graphics board

Serious Software Features

IRIX 5.1	IEEE POSIX 1003.1 FIPS 151-1 UNIX® System V.4 4.3 BSD enhancements SVID Issue 3 X11R5 Window System OSF/Motif Toolkit 1.2 Display PostScript IRIS GL Open GL
Indigo Magic	Media User Interface IRIS Showcase™ 3.0 Media Tools Media Mail™ Photo-CD™ support Speech recognition
PC & Macintosh Emulation	Trial copies of PC & Macintosh emulators

SGI Accessories Supported

GIO options (single wide)	Indy Video Ethernet Fast SCSI-2
GIO options (double wide)	FDDI single attach (fiber only)
Tablet	Hitachi 1111C
External Drives	SyQuest (88MB)
External Tapes	1.0GB QIC 2.0GB DAT
Input Devices	Dials Dials and buttons Optical mouse
Other External Devices	CD-ROM MIDI Interface

Performance Chart

CPU	R4000 PC @100 MHz	R4000 SC @100 MHz
SPECint92	36	57
SPECfp92	37	63
XLines/sec	1.0M	1.4M
3D Vectors/sec	400K	480K
Tmesh/sec (z)	26K	40K
Screen Clear	3msec	3msec
DMA Pixel Transfer		
8-bit	32M	32M
32-bit	15M	15M

Physical Environment

System	3"H x 16"W x 14"D 16 lbs.
19-inch Monitor	18.5"H x 18.5"W x 19.7"D 81.4 lbs.
17-inch Monitor	16.1"H x 15.7"W x 17.7"D 55 lbs.
15-inch Monitor	14.2"H x 13.4"W x 16.5"D 52.8 lbs.
Power Requirements	Voltage and Frequency 100-132, 200-264 VAC
Heat Dissipation	1000 BTU/hour
Ambient Temperature	+ 13 to + 35 degrees C (operating) - 40 to + 65 degrees C (non-operating)
Relative Humidity	10% to 80% operating no condensation 5% to 95% non-operating no condensation
Altitude	10,000' operating 40,000' non-operating
Vibration	0.02 inches, 5-19 Hz 0.35 G, 5-500 Hz
Noise	36 dB (A) in typical operating position

Regulatory Agency Approvals

Electromagnetic Emission	FCC Class B Canada DOC. Class B CISPR 22 Class B Germany VDE Class B VCCI Class 2
Product Safety	UL 1950 CSA 22.2 (#950) IEC 950 EN 60-950 Class 1 SELV
Ergonomic/Health	Germany ZH618

Serious Fun Features
Interactive Games
Out-of-Box Experience
Sound Schemes
Screen Savers
Full Color Background

For more information please call:

U.S. 1(800) 800-7441
Europe (41) 22-798.75.25
North Pacific (81) 3-5420.71.10
South Pacific (61) 2-879.95.00
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